THE
REPORT
OF
THOMAS YEOMAN,
ENGINEER,
CONCERNING
The Drainage of the North Level of the Fens,
AND
The Outfal of the Wiſbeach River.

1600/1428.

THE REPORT OF THOMAS YEOMAN, ENGINEER.

BY Order of the General Commiſſioners for draining the north level of the Fens, I took a view in September laſt of the river Nene, from Peterborough through Wisbeach, to its outfal into the ſea; in which I attended particularly to the great objects of drainage and navigation, ſo eſſentially neceſſary to the country through which I took my view.

The ſubjects before me have been attended to by perſons of great abilities at different periods of time, the evils pointed out, and many expedients propoſed to remedy them, ſome of which have been put in execution, but without producing the deſired effect.

I ſhall confine myſelf, in the firſt place, to the impediments which obſtruct the drainage and navigation, referred to me, and then point out what, in my opinion, will beſt anſwer the deſired end.

It is notorious that the two great impediments to the drainage are, the badneſs of the outfal to the ſea, and the many contractions and ſhallows in different parts of the channel in the river upwards; both which prevent the water from running off in time of floods and ſudden downfals, without great riſk, or actually drowning the low lands adjacent, which hath often been the caſe.

With reſpect to the river above Wisbeach bridge, I find by my ſoundings (which agree generally with thoſe taken by Mr. Elſtobb and Mr. Dunthorn) that the ſhallows which obſtruct moſt, are between about three quarters of a mile above Knar-Lake, to oppoſite Guyhirn; the ſection of the water at the latter I found to be not more than one ſeventeenth part of that at Peterborough bridge, and one third and an half of the ſection at Wisbeach bridge.

From a little below the Horſeſhoe, to the interrupted and foul diſcharging place of New Gunthorpe Sluice, in many places there is not more than from two to one foot of water at ebb, from whence to near the Waſhway-houſe, the channel runs amongſt ſhifting ſands in a wide and open bay, which I am informed frequently alters by the variation of the wind and tides; the conſequence of which is, that in dry ſeaſons, after ſweeping tides, the outfal is choaked up with ſand, to the great detriment of the drainage and navigation.

The two great cauſes of inundation have been extraordinary equinoctial tides, and wet ſeaſons; the former of which ſeldom happen, and when they do, their power is of ſhort continuance; the latter are the moſt formidable, and their power durable and hurtful; and if that power can be diverted from an enemy to a friend, a great point will be gained.

I ſhall therefore now give my opinion of the means that I think will be moſt likely to prevent the foreign waters from overflowing the banks through the Fens, and alſo to procure and preſerve a good outfal to the ſea.

If an effectual means can be found to prevent the dreadful effects of the ſhifting ſands, &c. in the Waſh bay, at an expence that ſhall not exceed the advantages obtained by the undertaking, I readily give it as my opinion, that the way to produce the deſired effect, without a ſea ſluice, will be to open an artificial river from the river end; nearly in the direction of Kinderley's propoſed cut, and through the new incloſures below Sutton, within the ſecond ſea wall or bank nearly in a direct line through the ſands to the Eye, vide the dotted line in the plan from A to B (this ſtruck me very much, and I mentioned it to Mr. Wing, upon my ſurvey) and to open the river from Wiſbeach bridge to above Knar Lake at C, to at leaſt the capacity of that bridge, and to a level bottom.

I ſay, if an effectual means can be found to keep the ſand in the open bay, out of the new channel, which it certainly can, if the expence be not too great; and as the fall at the eye is the greateſt that there is any hopes of obtaining; and as the ſands are more groſs and heavy the nearer they reach the ſea; it is to be preſumed, that the reflux of the tide, added to the waters of the Nene, will be abundantly ſufficient, not only to keep the outfal open, but with the aid of the hedge-hog, &c. to deepen every obſtructing ſhoal below Wiſbeach bridge; by which means the navigation will be greatly improved, the drainage of the North Level ſecured; when Gunthorpe ſluice is lower; Wiſbech and Walderſea Fens may be drained by natural means; to which I beg leave to add, that a conſiderable quantity of the waters of the North Level, may be run off at their antient diſcharge above Guyhirn, in aid of Shiredrain.

It may be objected that there are many inſtances to prove that a ſea ſluice, under proper regulations, is the only means that has been found out effectually to ſecure a good outfal, and conſequently preſerve a drainage through a flat country, and that ceteri paribus, the nearer it is fixed to the ſea the better.

I acknowledge that it muſt be very difficult, and for the moſt part impoſſible to clear out ſome rivers and harbours, in an effectual manner, without a ſea ſluice, and that very near the ſea too, where tempeſtuous weather on a ſandy ſhore, will fill up the outfals in one tide; and I recollect what I had from the teſtimony of perſons greatly intereſted in the drainage of the level of Ancholme; that about the year 1640, twenty thouſand acres of land were recovered by erecting a ſea ſluice, near the Humber, upon a new river that was cut for draining the whole level, which under proper regulations produced the deſired effect; but upon the decay or rather deſtruction of the ſluice, the greateſt part of the level hath been reduced to its former drowned ſtate. The navigating a large number of veſſels up to Glandford Brigg and back, which is about ten miles, added to the tide and back waters, have not been ſufficient to clear out the ſediment of the foul tide water of the Humber, which has been depoſited about the midway from the Humber to Brigg, the place where the tide waters generally meet the land waters, but on the contrary, it has increaſed to ſuch a degree, that the veſſels even in ſome ſpring tides, have been dragged by the ſtrength of horſes, upon the bottom of the main drain, for miles together, which bottom was higher than the lands that uſed to be drained through this channel; and I make no doubt but that the obſtructions between Knar Lake and Guyhirn, are chiefly owing to the ſame cauſe, by the meeting of the foul tide waters, from the Waſh below, and the land waters, though by ſlower degrees. But I beg leave to ſay, that many circumſtances in the abovementioned places differ from this, upon enquiry I do not find that there has been any material alteration in the ſhores at the Eye, within the memory of man, and as the waters of the Nene are ſo much ſuperior to thoſe of the Ancholme; if the dirty ſand in the Waſh-bay is kept out of the artificial channel, I am of opinion as I ſaid before, that the outfal will be effectually kept open without a ſea ſluice, near the Eye; but I am alſo of opinion, that the method to render this ſcheme the moſt effectual will be, to erect a navigable ſluice, ſufficient to diſcharge the floods above Guyhirn, and below the place where Morton's Leam joins the new Leam: The uſe of this ſluice will be to ſecure a good navigation to Peterborough, and freſh water for the Fens in dry ſeaſons; and at every convenient opportunity, to aid the tide water in its retreat with a flaſh, which will not only clear away the ſilt depoſited both by the land and tide waters, but aſſiſt the ſea waters in grinding down the bed of the river both above and below Wiſbeach, &c.

The large tract of land called the Waſh between the South-bank and the new Leam from Stanground to a little above Guyhirn, was left no doubt as a baſon to receive a conſiderable quantity of water upon a downfal, while the tide is flowing up the river, and in the ebb to join the tide water, in its way to the ſea, and add to its efficacy in ſcowering the outfal; but I beg leave to obſerve, that although this large reſervoir may have had a good effect in the infant ſtate of the drainage, yet, in proceſs of time, it has been raiſed by the ſediment of the foul water being left upon it from time to time, ſo that in wet ſeaſons it is ſoon covered, and becomes a large ſurface, which in windy weather muſt greatly damage the banks, and expoſe the low lands to drowning: I therefore cannot help recommending the raiſing of a bank on the South-ſide of the new Leam, which may be done with the earth, which is thrown out by widening and deepening of the river, by which means a large tract of land will be recovered to be at leaſt good ſummer land; the damage from the ſurge of the waves in a great meaſure will be prevented, and the waters inſtead of remaining long on the land, will be driven to the ſea, doing execution at the bottom of the whole river, in its way thither.

It muſt not be concealed, that to render this ſcheme effectual for generations to come, the firſt expence will be very great.— Alſo conſtant attention, and conſiderable annual expences will be neceſſary to keep the whole below the ſluice, in a proper contracted ſtate, for if the channel of the river is permitted to grow wide, its depth will decreaſe, and in time, ſilt up, to the deſtruction of both the drainage, and the navigation.

I apprehend that the whole of the deepening below Wiſbeach-bridge, may be effectually done with the reflow of the tide, and the land waters in their way to the ſea, by the help of the Hedgehog, as I have hinted before, and above the bridge by the labour of mens hands; but, ſome of the obſtructions will be very difficult to be removed in and about the town of Wiſbeach, eſpecially a little above the bridge, without diverting the waters of the Nene, and as the number of veſſels in the port of Wiſbeach, will be greatly increaſed, if the river is improved, which will in ſome meaſure impede the current of the water, I think it will be adviceable to make a new cut, from about the end of Picard's-lane, keeping all the way as near the courſe of the lane as it is poſſible, to prevent the diviſion of property as much as may be, and let it fall into the channel, a little above the Horſhoe; by this cut the downward water will be diverted during the time of clearing the moſt difficult parts of the harbour, eſpecially above the bridge; and will be of uſe to accelerate the waters, in their way to the ſea in time of floods, without injuring the veſſels in the harbour.

Since I wrote the above, I have ſeen Mr. Golborne's report, whoſe ſcheme does not materially differ from what I have propoſed in general, and as his experience has been very great upon the river Dee, I ſhall not pretend to give a more accurate eſtimate of the expence, than what he has delivered, but beg leave to add the expences, which may be incurred by the additional works, I have propoſed.

If the expence of carrying the above ſcheme into execution ſhould be judged too great, I think taking every circumſtance into conſideration which has occurred to me from my own obſervations and enquiries when I made my ſurvey, that Mr. Smeaton's ſcheme will be a very good one, with the addition of a ſluice above Guyhirn, and making a ſide cut by the town of Wiſbeach.

It is certain that the channel of the river which uſed to run on the Lincolnſhire-ſide of the bay, below the Waſh-harbour, has of late years been ſtretching itſelf towards the Norfolk coaſt; this has been owing chiefly to two cauſes, the one is by erecting jetties to prevent the deſtruction of the ſea banks of the new incloſures on the Lincolnſhire coaſt, and the great number of gullies on the Norfolk ſide, which accumulate large quantities of water in tide time, that in their retreat weakens the banks, and as it were invites the general tide water, and the waters of the Nene to join them forming a channel nearer and nearer to that ſide; I am under no doubts, but by the ſame ſort of means the channel may be brought back again by ſlow degrees, or at leaſt be ſtopt from making any further progreſs that way.

With reſpect to the diſpoſition of the North Level, as well as other lands that may be effectually drained by means of this undertaking, if it be carried into execution, it is ſo well underſtood by almoſt every individual intereſted in it, that it will be needleſs for me to enter into a minute diſquiſition of the particular parts of it; I only ſhall beg leave to obſerve, that from the Levels which have been accurately taken, it appears, that there is a fall in general from Peterborough to the Eye at ſea, at low water 18 feet in the length of about 32 miles, which is ſix inches and three quarters of an inch in a mile; and twelve feet three inches at the Waſhway harbour, being twenty-ſix miles and a half, which is more than five inches and a half in a mile. It is therefore evident to every one whoſe occupation or ſpeculation hath led them to the knowledge of the principles of drainage, that if by any means the river can be deepened, ſo that the bottom of it ſhall be nearly in a right line from the Eye at the ſea, to three quarters of a mile above Knar Lake, or even from the Waſhway harbour to that place, and the principal ſhoals taken up from thence through the new Leam, making it at leaſt ſeventy feet wide, and it can be preſerved in that ſtate, that the great ends deſired may be obtained, both for the drainage and the navigation.

I make no doubt but that by the proper uſe of the ſluice above Guyhirn the depth of the river upwards may not only be preſerved, but be made ſtill deeper if it be required.

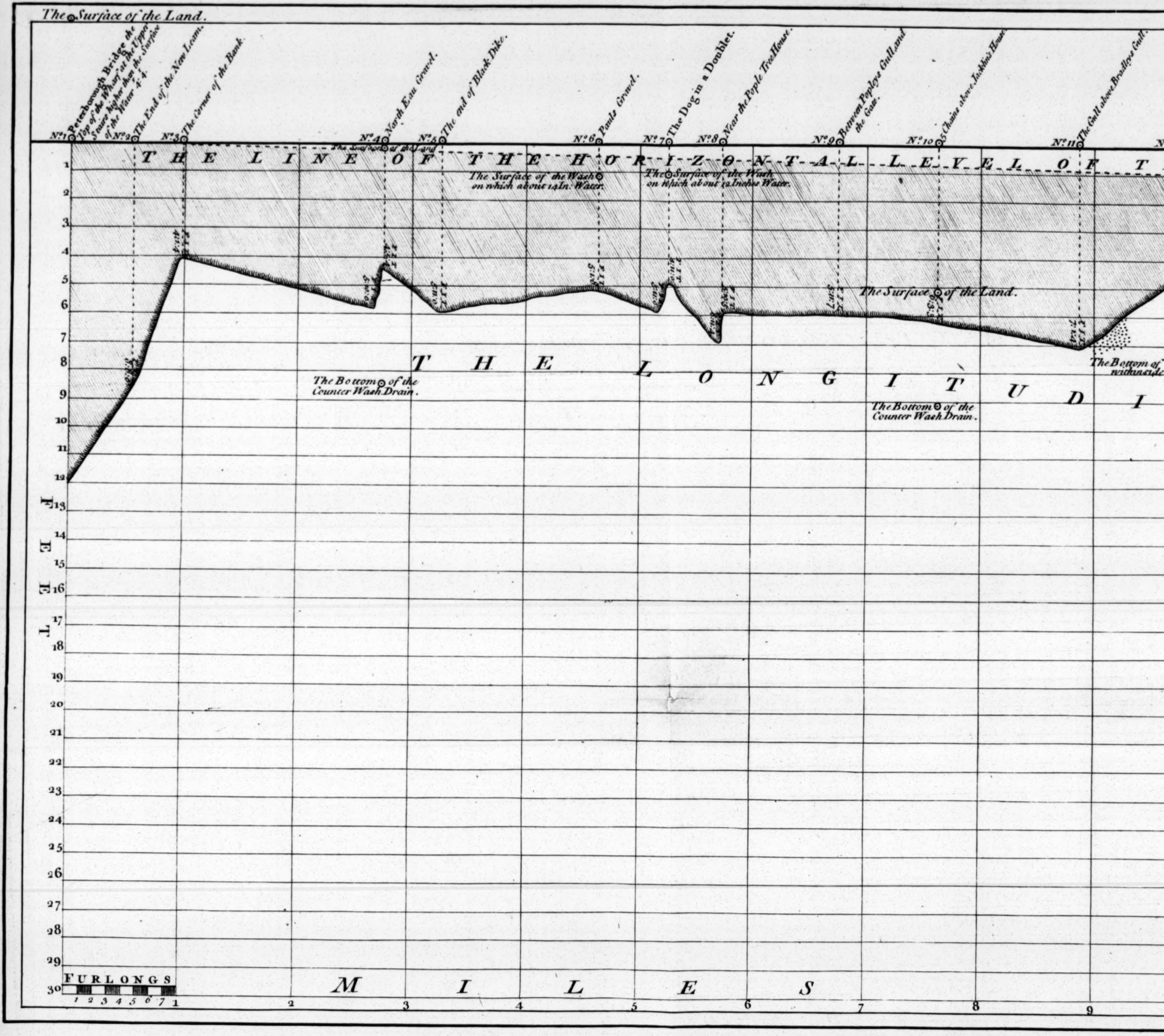
	l.	s.	d.
The expence of making the ſide cut by the town of Wiſbeach about a mile long, fifty feet wide at the top, twenty feet wide at the bottom, and ten feet deep, at four-pence per yard, digging, &c.	380	0	0
Three carriage bridges over the cut	450	0	0
Land to purchaſe for cut and cover	450	0	0
To oppening the river upwards with a pen ſluice above Guyhirn	6000	0	0
	£7280	0	0

Caſtle-ſtreet, Leiceſter-fields,
November 15th, 1769.

THOMAS YEOMAN.

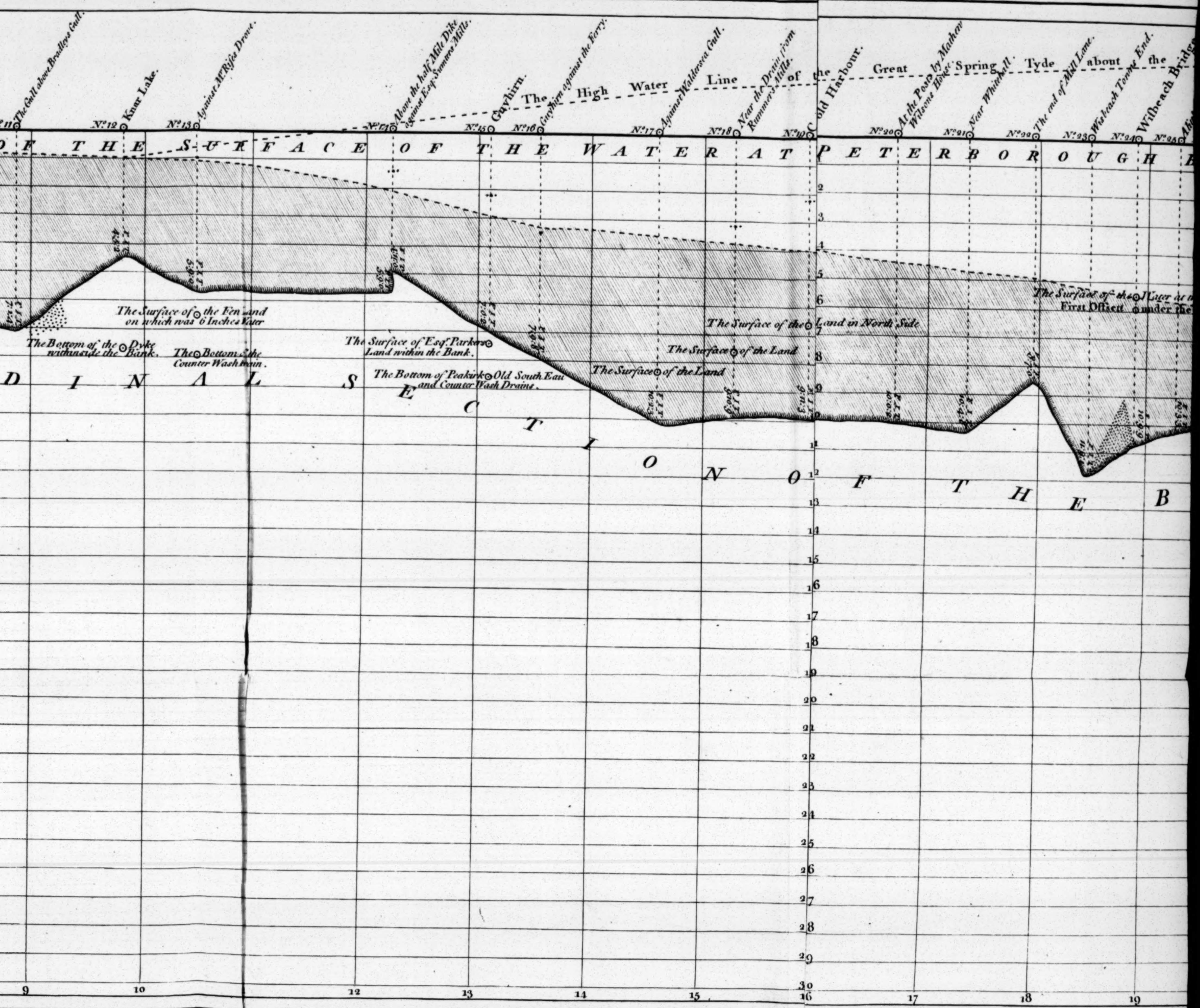
BRITISH MUSEUM 17 APR 78

A CHAIN and SCALE of LEVELS along WIS



Note. The Distances of Places are laid down according to the Measures in taking the Levels, and the Scale by which the FALLS *are laid down is much lar*

WISBEACH RIVER and CHANNEL from PETERBOR



The Gull above Bradleys Gull.
Nº 11
Nº 12 Knar Lake.
Nº 13 Against Mr. Rises Drove.
Nº 14 Above the half Mile Dike against Esq. Sumners Mills.
Nº 15 Guyhirn.
Nº 16 Guyhirn against the Ferry.
Nº 17 Against Waldersea Gull.
Nº 18 Near the Drain from Rummer's Mills.
Nº 19 Cold Harbour.
Nº 20 At the Post by Mathew Wilsons House
Nº 21 Near Whitehall
Nº 22 The end of Mill Lane.
Nº 23 Wisbeach Towns End.
Nº 24 Wisbeach Bridge
Nº 25
The High Water Line of the Great Spring Tyde about the
OF THE SURFACE OF THE WATER AT PETERBOROUGH B
The Surface of the Fen Land on which was 6 Inches Water
The Bottom of the Dyke withinside the Bank.
The Bottom of the Counter Wash Drain.
The Surface of Esq. Parkers Land within the Bank.
The Bottom of Peakirk Old South Eau and Counter Wash Drains.
The Surface of the Land
The Surface of the Land
The Surface of the Land in North Side
The Surface of the Water at the First Offsett under the
DINAL SECTION OF THE B
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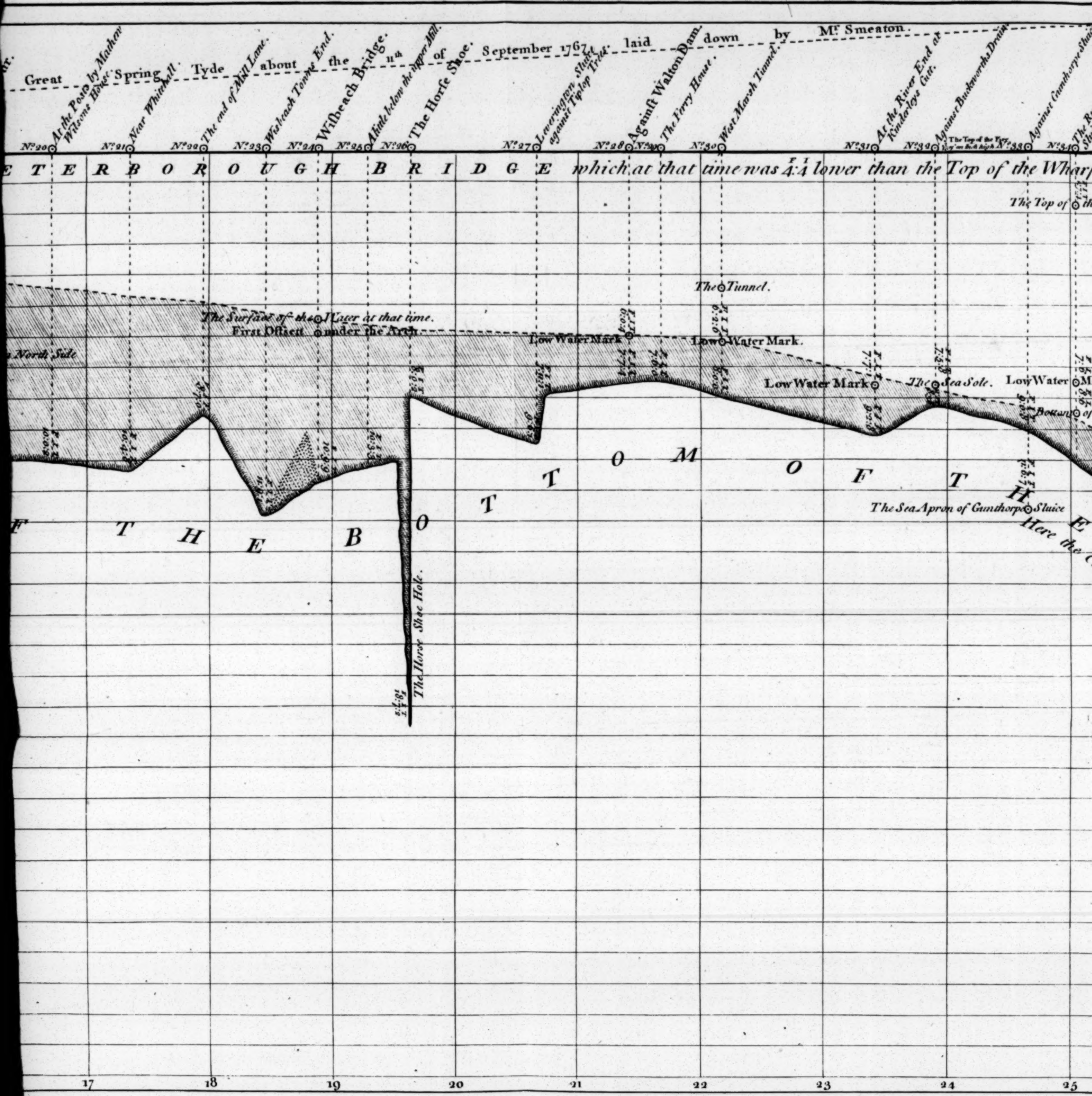
n is much larger in proportion than the Scale by which the **DISTANCES** *are laid down; which makes the Inequalities appear greater in proportion than they r*

om PETERBOROUGH BRIDGE down to the EY


Great Spring Tyde about the 11th of September 1767. laid down by Mr Smeaton.
No 20 At the Posts by Mathew Wilsons House
No 21 Near Whitehall
No 22 The end of Mill Lane.
No 23 Wisbeach Towns End.
No 24 Wisbeach Bridge.
No 25 A little below the upper Mill.
No 26 The Horse Shoe.
No 27 Leverington Sluice against Tiplop Trees.
No 28 Against Walton Dam.
No 29 The Ferry House.
No 30 West Marsh Tunnel.
No 31 At the River End at Kinderleys Cutt.
No 32 Against Buckworths Drain
The Top of the Tyes
No 33 Against Gunthorpe Sluice
No 34 The R… Sh…
…ETERBOROUGH BRIDGE which at that time was 4 F. 4 I. lower than the Top of the Wharf
The Top of the
The Tunnel.
The Surface of the Water at that time.
First Offsett under the Arch.
North Side
Low Water Mark
Low Water Mark.
Low Water Mark
The Sea Sole.
Low Water M
Bottom of
The Sea Apron of Gunthorpe Sluice
Here the
The Horse Shoe Hole.
F THE BOTTOM OF THE
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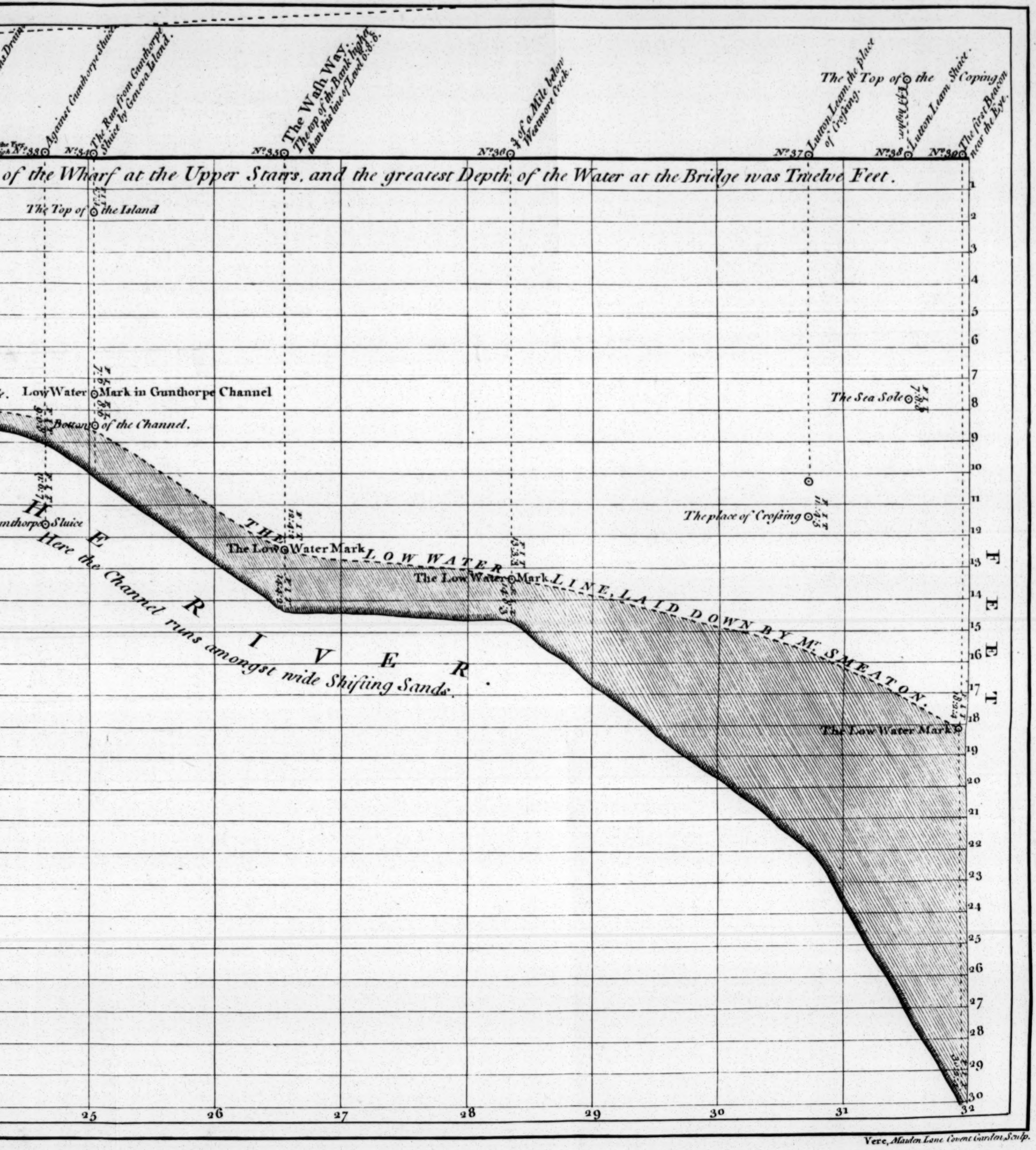
lities appear greater in proportion than they really are, but this could not be avoided as they could not be made sensible by one and the sa

EYE at SEA. *Taken in 1767. by William Elstobb.* —



Vere, Maiden Lane Covent Garden, Sculp.

one and the same Scale unless that Scale had been Enormously large. —— *The Numbers refer to the Places in the Map.*